

REMARKS

Reconsideration is respectfully requested.

By this Amendment, Claim 1 has been amended to more clearly and precisely recite and define the subject matter of the invention.

The claim rejections contained in the Office Action are based on two prior patent documents, namely WO95/04948, which has as an applicant and inventor the present applicant (Lee), and US Patent 5,853,197, Mowry et al.

The reference WO95/04948 corresponds with US Patent 5,825,547, (both hereinafter referenced as Lee) which is described in the background to the invention of the present application by reference to the trade marked products going under the name, "Exelgram". See paragraphs at Page 4, lines 1-12, or see Paragraphs [0012] and [0013] of the published version of the present application (US 2001/0043396 A1).

While it is noted that a common inventor is listed in both the PCT reference WO95/04948 and this application, the present invention, as embodied and claimed herein, the present application can not claim benefit of the prior Australian application by virtue of its earlier publication date. It is further noted, however, that the present application does claim the benefit of PCT application No. PCT/AU99/00520, filed on June 29, 1999, and therefore it is considered that a certified copy of the Australian application need not be submitted.

In Exelgram devices made according to the prior art reference, Lee, the diffractive structural elements are arranged in tracks. This arrangement provided an improvement over the common inventor's earlier "Pixelgram" devices, in which the diffractive structures were arranged in small squares, or "pixels," also described in the background art section herein. Each small square carried a number of diffractive structural elements

(grooves or ridges) which extended across the square. Each square of diffractive elements created a diffractive effect which was equivalent to a single pixel in a diffraction image generated by the device. Individual squares were not separately discernible to the human eye, being less than 0.25mm in width, and more typically around 0.06mm.

Exelgram devices had the disadvantage that the structural elements were discontinuous between adjacent squares, resulting in extraneous diffraction effects caused by these discontinuities. Exelgram devices addressed this problem to some extent by replacing a whole row of squares with a single continuous track. Discontinuities along the direction of the tracks were eliminated, but discontinuities between adjacent tracks remained. The present invention does not require the use of discontinuous tracks or pixels, and it therefore represents an improvement over both Pixelgram and Exelgram devices, both of which were invented by a common inventor of the invention herein.

In the simplest embodiment of Exelgram, illustrated in Figures 1 to 3 of Lee, a series of left-channel tracks 4 are alternately interspersed between a series of right-hand tracks 5. Each track consists of a large number of individual diffractive structure elements. It is respectfully presumed from the Office Action that the examiner may have interpreted one of the sets of tracks, say tracks 4, as containing "background elements", and the other set of tracks 5 as containing "interstitial elements". The wording of the claims was not intended to be interpreted as covering the set types of devices, and the above amendments have been made to clarify specific the differences. Amended Claim 1 now indicates that the diffractive device has a "region" of diffractive structural elements. A plurality of the background elements extend across the width of the region, and the interstitial elements are located within the same region, interspersed between the background elements.

It is respectfully submitted that Claim 1, as amended makes it clear and specifically recites that the interstitial elements must be embraced within the longitudinal extent of the background elements, and they cannot be located in a different region (or "track"), so that the invention as defined in the amended claim clearly distinguishes Lee.

The applicant does not agree with all of the analysis made in the Office Action in respect of the dependent claims, but in view of the amended Claim 1, it does not appear necessary to address the further issues at present, and Applicant will rely on the patentability thereof for indicating patentability of the dependent claims..

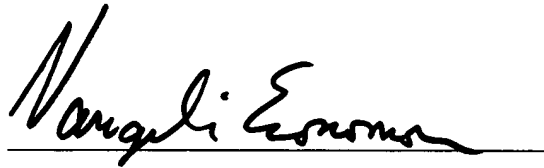
With regard to US Patent 5,853,197 to Mowry et al., it is noted that it relates to a printed document, and not to a diffractive device at all. Mowry et al. do not anticipate any of the claims of the present application, because the security document disclosed by Mowry et al. does not include a diffractive device, it does not have a surface relief structure (relying instead on two-dimensional printing which does not have a "relief structure"), it does not generate any diffraction images, and it does not have any of the recited structural elements. Thus, it is respectfully submitted that Mowry et al. fails to anticipate or make obvious the invention, as presently claimed.

Although Mowry et al. are generally silent as to how the disclosed invention works, the security document disclosed by Mowry et al. exploits various imperfections in color photocopiers to prevent accurate copying. For example, a color copier typically causes larger dots to stand out prominently while smaller dots become less pronounced over a wide range of color copier settings. If an original document has a number of different lines and dots with different densities and spacings, some of them are likely to reproduce poorly, depending upon the particular imperfections of the color photocopier used.

Mowry et al. fail to teach anything about diffraction and the reference does not add to the teachings of Lee. The printed surface in Mowry et al. is two-dimensional and does not have the three-dimensional relief structures necessary to create diffractive effects. Further, the smallest line spacing referred to in Mowry et al. is 130 lines-per inch (column 6, line 14), which is about 0.2mm. This is considerably greater than the spacing required to obtain a useful diffraction effect.

For the above reasons, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections and earnestly solicits an indication of allowable subject matter.

Respectfully submitted,

A handwritten signature in black ink, reading "Vangelis Economou", written over a horizontal line.

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MARKED-UP VERSION OF CLAIM 1

1. A diffractive device having a surface relief structure which, when illuminated by a light source, generates one or more diffraction images which are observable from particular ranges of viewing angles around the device, including:

a region of diffractive structural elements, the region having a length and a width;

background diffractive structural elements distributed over the length of the region, a plurality of the background elements having a longitudinal extent which extends throughout the width of the region; and

interstitial diffractive structural elements;

wherein the interstitial elements are interspersed between the background elements within the region such that the diffractive action of the background elements is modulated by the interstitial elements, with differing interstitial element configuration in differing parts of the surface relief structure producing differing diffraction effects in corresponding parts of the diffraction images.